



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/662,145

09/15/2003

His Majesty Bhumibol Adulyadej

Royal 001-2003.usa

8737

⁷⁵⁹⁰
The Office of His Majesty's Principal
Private Secretary
BANGKOK, 10200
THAILAND

^{04/09/2009}

EXAMINER

HOGAN, JAMES SEAN

ART UNIT

PAPER NUMBER

3752

MAIL DATE

DELIVERY MODE

04/09/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/662,145	BHUMIBOL ADULYADEJ, HIS MAJESTY	
	Examiner	Art Unit	
	JAMES S. HOGAN	3752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 February 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 11, 13, 14, 16, 18 and 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 11, 13, 14, 16, 18 and 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date: _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

Applicant's arguments filed February 26, 2009 have been fully considered but they are not persuasive. See below for explanation.

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, all four references are in use for the desired effects of rainmaking, fog dispersion, hail prevention, and other weather modifications. By their use of known chemicals, both for primary use and secondary use, within this field, the Examiner contends that their use is well known in the art in any combination and therefore applicable to the instant claims of the application. Further, as stated in earlier actions, the application of any of the known agent in any form of physical state, liquid (as in Montmory), solids (as in Nelson et al), or gaseous (as in Mather), can be considered to be one known by one of ordinary skill.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 11, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Montmory in view of U.S Patent No. 5,357,865 to Mather and further in view of U.S. Patent No. 3,659,785 to Nelson et al (cited in previous actions), U.S. Patent No. 3,613,992 to Knollenberg, and even further in view of U.S. Patent No. 6,056,203 to Fukata

Claims 1 and 11 claim a process of rainmaking comprising the steps of triggering, fattening, attacking and enhancing.

Montmory ('271) discloses a process of rainmaking (i.e., cloud seeding), via aircraft delivery, which teaches much of the claimed techniques as "triggering," "fattening" and "attacking". The triggering of Montmory is taught as the use of one or more hydroscopic chemicals, notably dimethyl sulfoxide (hereto as DMSO), and of secondary chemicals for stabilization purposes, namely salts, sodium chloride, as in claim 1 and also calcium chloride, the later taught for "activation" of a cloud formation, as it should be noted that Nelson et al ('785) clearly lists sodium chloride and calcium chloride as known hydroscopic chemicals used for weather modifications (Col. 2, lines 30-34). Further, Montmory's use of DMSO lends motivation for the use of "fattening" with dimethyl sulfoxide (DMSO). Furthermore, Montmory discloses part of the step of "attacking" (that is, the use of a device, as described in column 4, lines 32-59, and Col. 4, lines 51-60) where micro droplets of the combined hydroscopic chemicals are sprayed into and at the base of clouds from an aircraft. Montmory teaches the

dispersion of known cloud-seeding chemicals (Col. 3, Lines 30-40) in an atmosphere "likely to give rise to precipitations" and although further teaches the performance of the known chemicals "once the relative humidity exceeds 40 to 50 percent", it would have been obvious to proclaim a desired cloud-seeding at a relative humidity of not less than 60 percent, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering a workable range involves only routine skill in the art. See in *re Aller*, 105 USPQ 233. Further, components of the teaching of "attacking" not taught by Montmory are taught by the combination of the procedures taught by Mather ('865) and Knollenberg ('992). Mather ('865) and Nelson (et al ('785) teach the use of sodium chloride as a rain initiation agent used for cloud seeding (claim 1) upwind and above a cloud. Knollenberg teaches the use of urea in a method for producing rain or snow by applying urea to the area of a cloud where temperatures are known to be between 6°C and -15°C. As per claims 1, and 11, it can be argued that the application of any of the known agent in any form of physical state, liquid (as in Montmory), solids (as in Nelson et al), or gaseous (as in Mather), can be considered to be one known by one of ordinary skill. Further, it can be argued that at the base of any cloud is where these temperatures can be found, as the internal temperature of a cloud decreases with respect to higher elevation, one can choose any level of a cloud that one believes the optimum conditions for initiating rainfall exist, thus the desire to disperse the known chemicals from a mid cloud area. Neither Montmory ('271) nor Mather ('865) and Knollenberg ('992) teach the process of "enhancing". Fukata ('203) teaches to "enhance" the volume of rainfall by the use of silver iodide flairs seeded into

the top of a cloud (at the part of the cloud where the temperature is between 0°C and – 15°C) and further discloses that ice crystals formed are by the use of silver iodide flares and will be affected by the effect of a cloud becoming more transparent and will change to liquid precipitation. By combining the various chemical usage and techniques as set forth by Montmory ('271) (DMSO with NaCl and/or CaCl), Nelson et al ('785) (NaCl, CaCl cited, urea claimed), Fukata ('203) (dry ice pellets), Mather ('865) (NaCl with KCl) and Kollenberg ('992) (urea), the Super Sandwich technique is taught, and, as per claim 18, Montmory teaches the desire to prevent hail during the process of initiating rainfall. Therefore, it would have been obvious to one skilled in the art at the time the invention was made to have simultaneously combined the known cloud seeding techniques, in any sequence of Montmory, Nelson et al, Fukata, Mather (865) and Knollenberg ('992) to insure the eruption of rain or to prevent hail.

Claim 13, 14, 16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,357,865 to Mather in view of U.S. Patent No. 4,362,271 to Montmory and further in view of U.S. Patent No. 3,659,785 to Nelson et al. and even further in view of U.S. Patent No. 6,613,992 to Knollenberg, and still even further in view of U.S. Patent No. 5,628,455 to Fukata and yet still even further in view of U.S. Patent No. 6,056,203 to Fukata.

The rejections of claims 1 and 11 above address the techniques referred to by the Applicant as “triggering”, “fattening”, “attacking” and “enhancing” and will not be replicated here. As per claim 13, the technique of relocating a cloud, referred to by the Applicant as “moving”, is taught tangentially by Nelson et al. ('785). As per claim 14, the

Art Unit: 3752

dispersion of fog (i.e. a low cloud) is taught by Nelson et al using flakes of hygroscopic chemicals (Col. 1, line 9-17), where fog evaporation equates to a cloud being raised, in the broadest reasonable interpretation, and therefor moved.. Calcium chloride is named as a known exothermic hygroscopic chemical used for this purpose (Col. 2, line 30-34). As vapor pressure reduces, the fog becomes buoyant, and therefore rises. A prevailing wind, well known in the art and inherent in nature, would then reasonably apply a moving force in a direction of the wins and therefor move the cloud. Regarding claim 16, in which the use of "fattening" and "attacking" are used, the rejections of claim 1 above address those techniques, and will not be replicated here, nor the use of the chemicals in a desired state (i.e. powder). The resultant of those techniques, upwind of a target area will result in the movement of the enhanced cloud. Therefore, it would be obvious to one skilled in the art at the time the invention was made to have applied the effect of fog dispersion on a cloud in order to raise its elevation and subsequently move it.

Regarding claim 20, the use of calcium chloride (exothermic-hygroscopic), urea (endothermic-hygroscopic) and sodium chloride (hygroscopic) in any combination is taught in the rejections above. Further, it can be argued that the application of any of the known agent in any form of physical state, liquid (as in Montmory), solids (as in Nelson et al), or gaseous (as in Mather), can be considered to be one known by one of ordinary skill. Therefore it would have been obvious to one skilled in the art at the time the invention was made to have combined the various cloud seeding and rainmaking

techniques, in any combination, in order to promote rainfall onto any desired land mass, including that of between hills and mountains.

Conclusion

1. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES S. HOGAN whose telephone number is (571)272-4902. The examiner can normally be reached on Mon-Fri, 6:00a-3:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Len Tran can be reached on (571)272-1184. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3752

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. S. H./

Examiner, Art Unit 3752

/Len Tran/

Supervisory Patent Examiner, Art Unit 3752